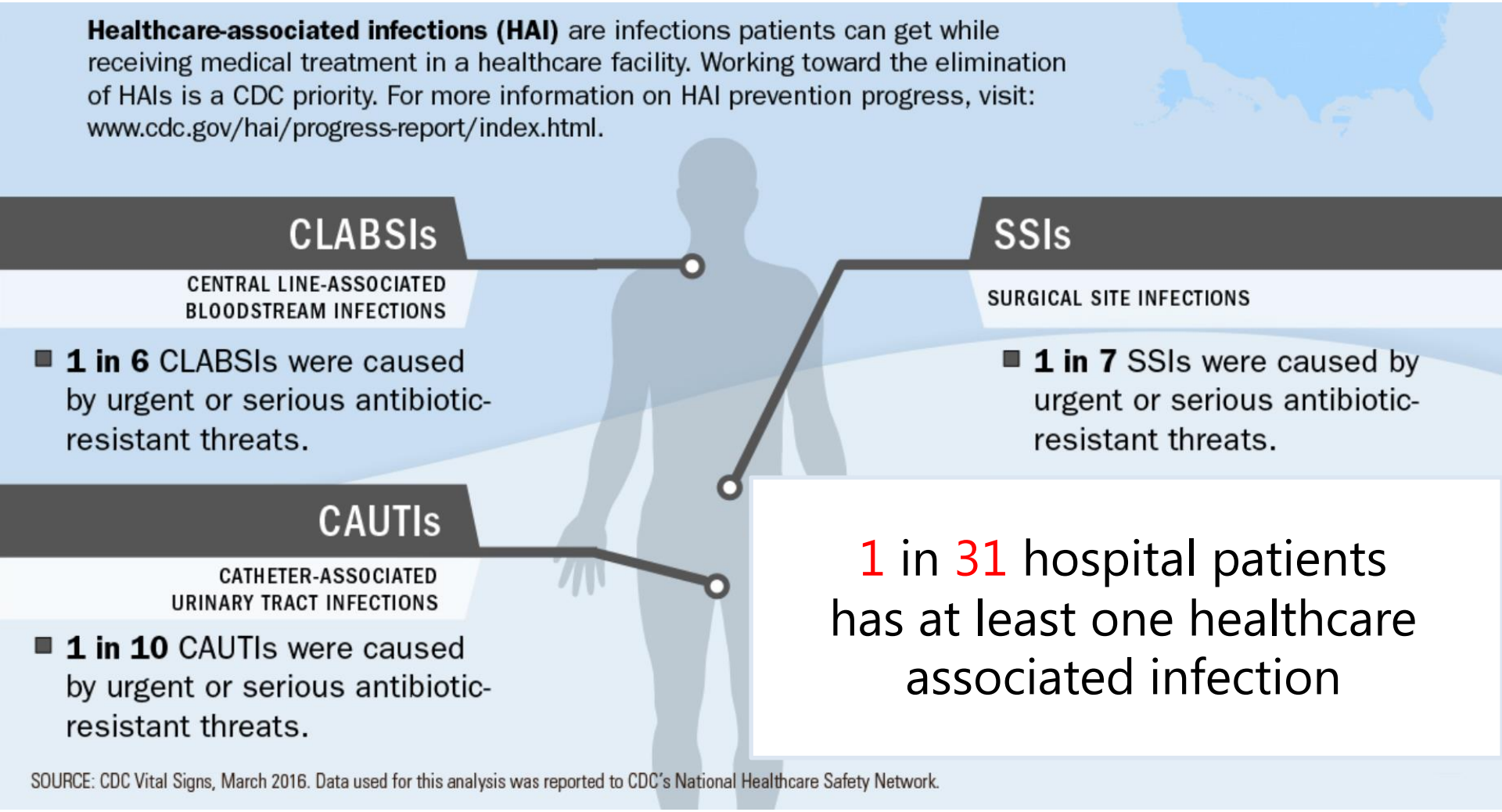
HEALTHY CHICAGO
CHICAGO DEPARTMENT OF PUBLIC HEALTH

Healthcare Associated Infections
Antibiotic Resistance
HAI/AR-Unit

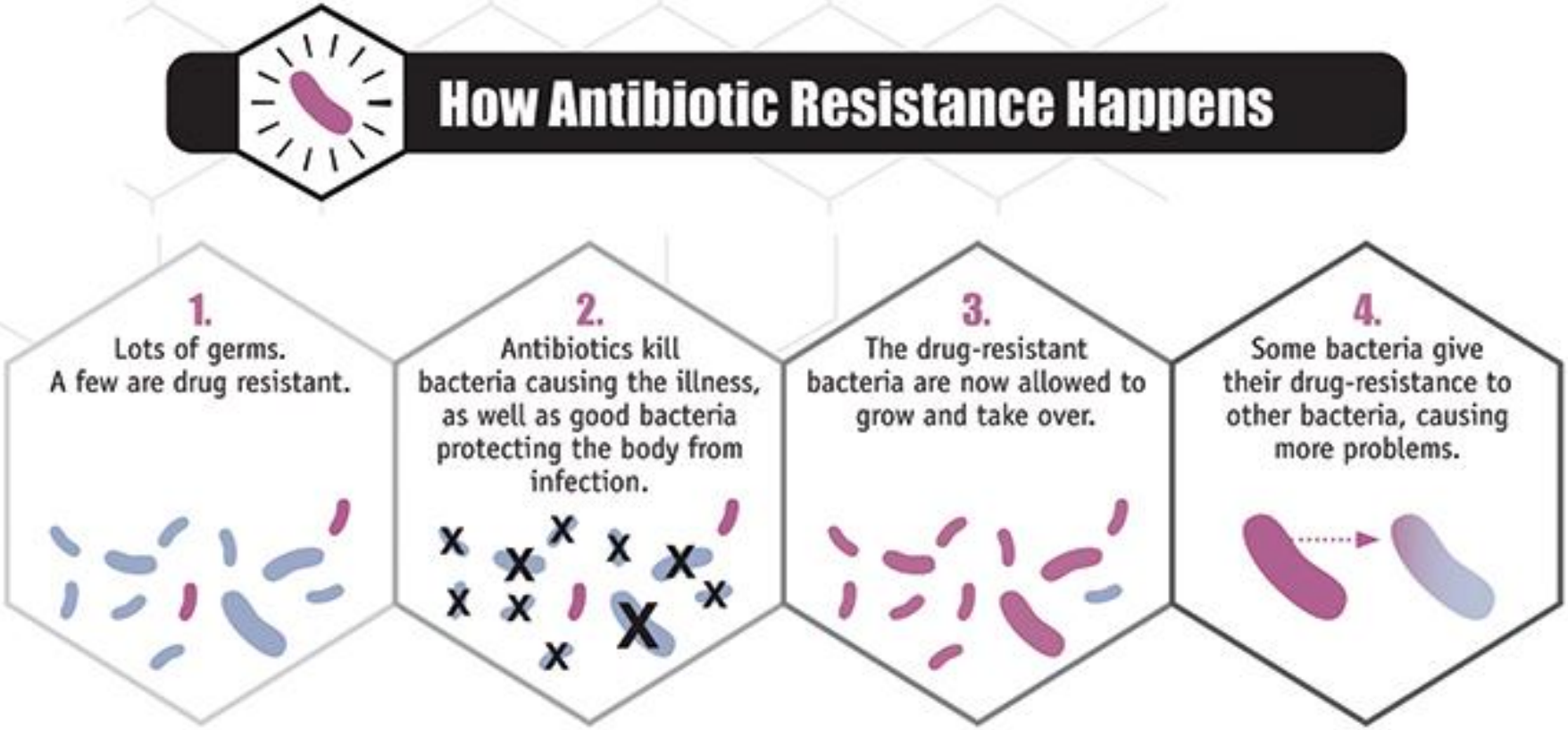
Massimo Pacilli, MS, MPH, CIC®
QA Manager- Lab Liaison

Healthcare Associated Infections



https://www.cdc.gov/hai/data/index.html

Antibiotic Resistance



https://www.pewtrusts.org/en/projects/antibiotic-resistance-project

Call to Action

2013 CDC Emerging Threats

HAZARD LEVEL URGENT

These are high-consequence antibiotic-resistant threats because of significant risks identified across several criteria. These threats may not be currently widespread but have the potential to become so and require urgent public health attention to identify infections and to limit transmission.

Clostridium difficile (C. difficile), Carbapenem-resistant Enterobacteriaceae (CRE), Drug-resistant *Neisseria gonorrhoeae* (cephalosporin resistance)

HAZARD LEVEL SERIOUS

These are significant antibiotic-resistant threats. For varying reasons (e.g., low or declining domestic incidence or reasonable availability of therapeutic agents), they are not considered urgent, but these threats will worsen and may become urgent without ongoing public health monitoring and prevention activities.

Multidrug-resistant *Acinetobacter,* Drug-resistant *Campylobacter,* Fluconazole-resistant *Candida* (a fungus), Extended spectrum β-lactamase producing Enterobacteriaceae (ESBLs), Vancomycin-resistant *Enterococcus* (VRE), Multidrug-resistant *Pseudomonas aeruginosa,* Drug-resistant Non-typhoidal *Salmonella,* Drug-resistant *Salmonella* Typhi, Drug-resistant *Shigella,* Methicillin-resistant *Staphylococcus aureus* (MRSA), Drug-resistant *Streptococcus pneumonia,* Drug-resistant tuberculosis (MDR and XDR)

HAZARD LEVEL CONCERNING

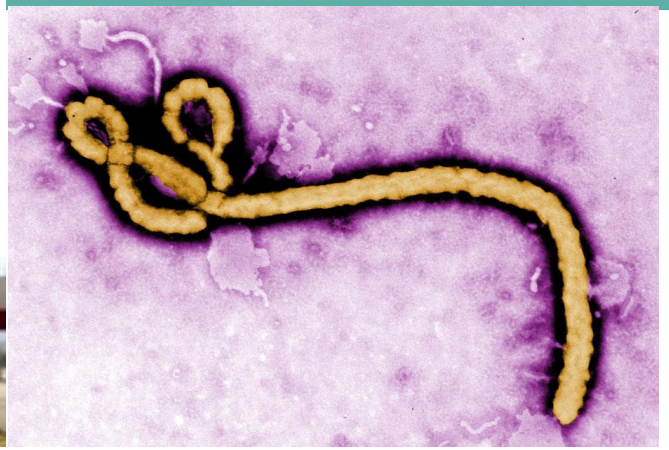
These are bacteria for which the threat of antibiotic resistance is low, and/or there are multiple therapeutic options for resistant infections. These bacterial pathogens cause severe illness. Threats in this category require monitoring and in some cases rapid incident or outbreak response.

Vancomycin-resistant *Staphylococcus aureus* (VRSA), Erythromycin-resistant *Streptococcus* Group A, Clindamycin-resistant *Streptococcus* Group B

Call to Action

2013 CDC Emerging Threats

2014-2016 Ebola Outbreak



Chicago Ebola Response Network (CERN): A Citywide Cross-hospital Collaborative for Infectious Disease Preparedness FREE

Omar Lateef ✉, Bala Hota, Emily Landon, Larry K. Kociolek, Julie Morita, Stephanie Black, Gary Noskin, Michael Kelleher, Krista Curell, Amy Galat ... Show more

Clinical Infectious Diseases, Volume 61, Issue 10, 15 November 2015, Pages 1554–1557,

AR Solutions *In Action*

CDC's Investments to Combat Antibiotic Resistance Threats

FISCAL YEAR
2018

CHICAGO, IL

$855,425

Funding for AR Activities
Fiscal Year 2018

$343,553

RAPID DETECTION AND RESPONSE to novel or high-concern drug-resistant germs is critical to contain the spread of these infections.

$398,872

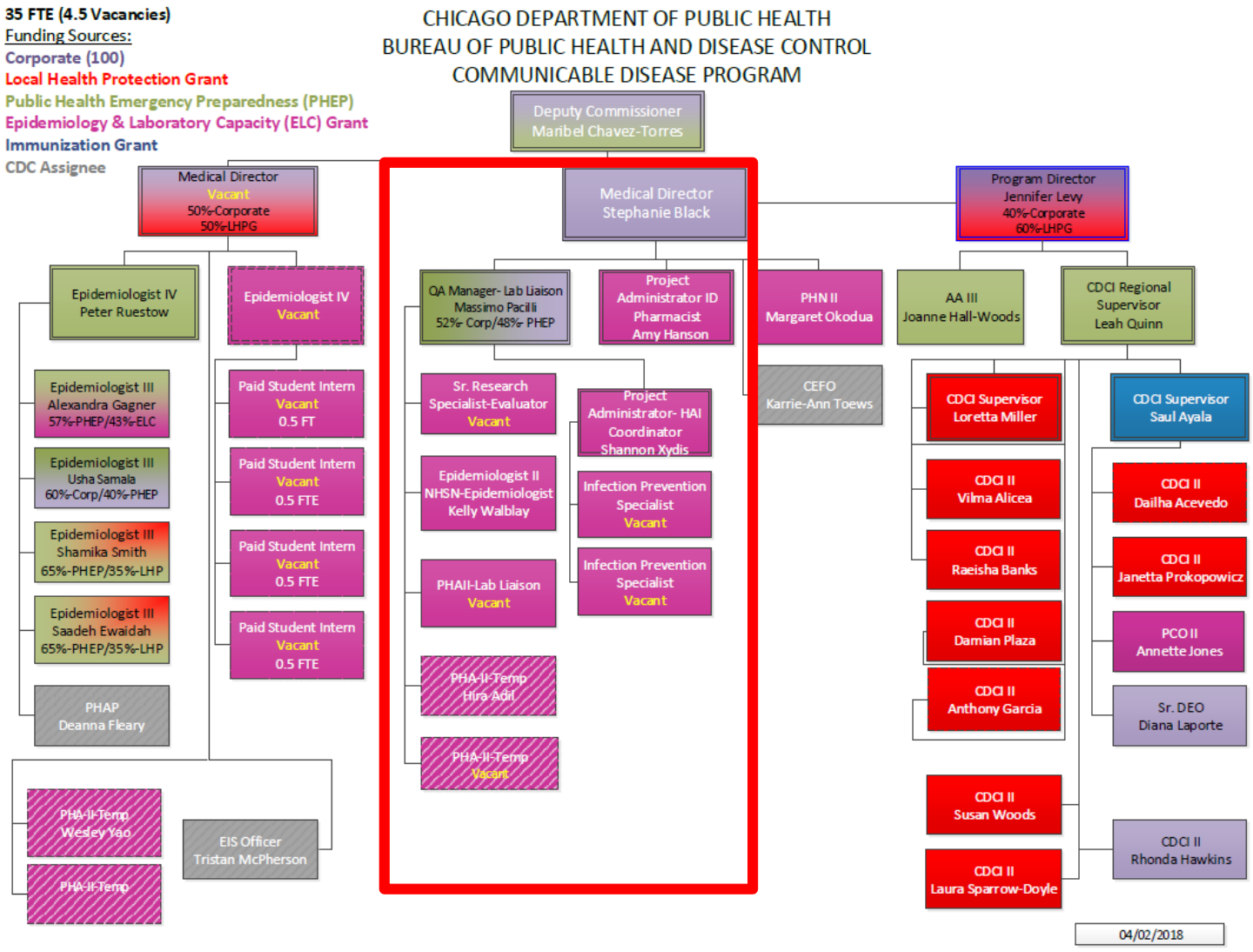
HAI/AR PREVENTION works best when public health and healthcare facilities partner together to implement targeted, coordinated strategies to stop infections and improve antibiotic use.

$100,000

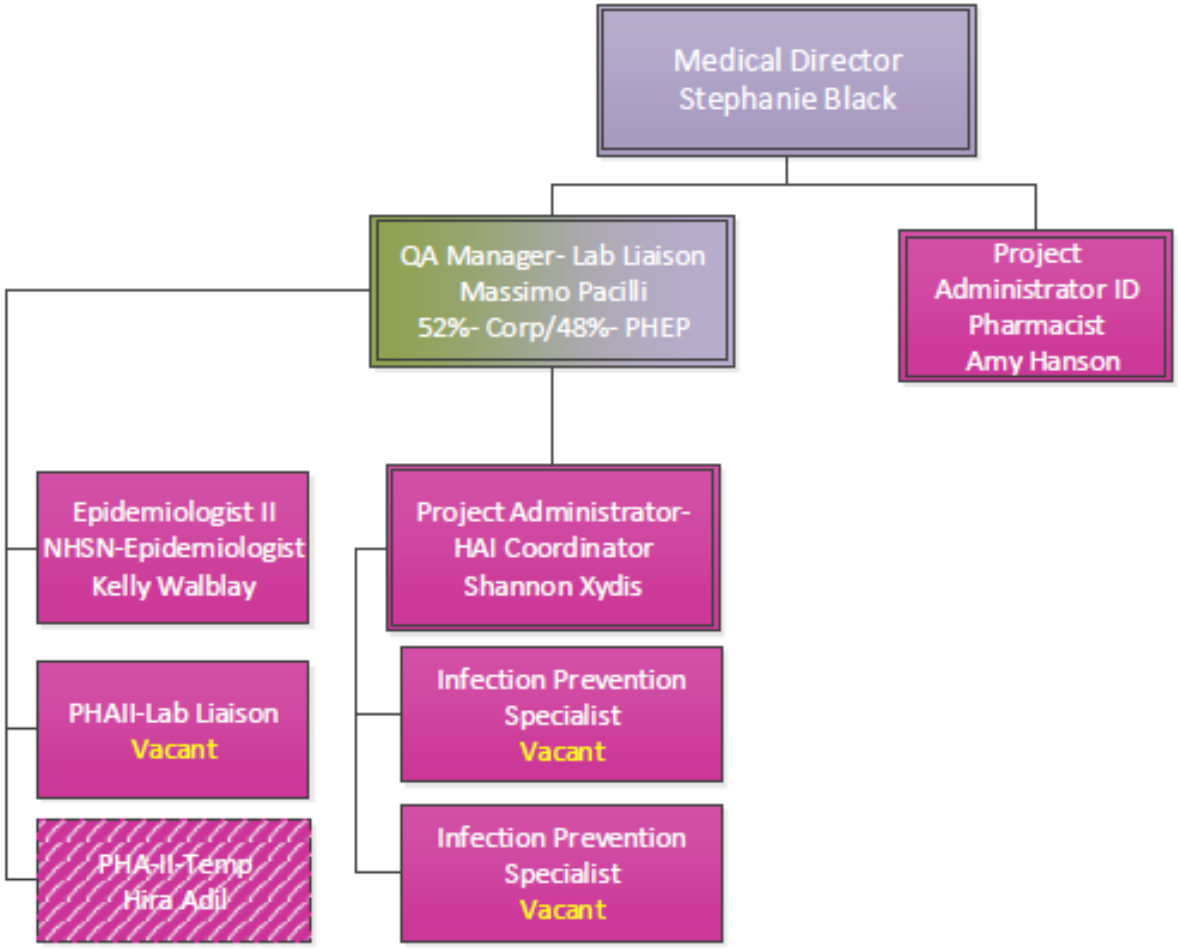
FUNGAL DISEASE projects improve our ability to track antifungal resistance and stop it from spreading.

https://wwwn.cdc.gov/ARInvestments/PDFDocs/Chicago-CDC-AR-Investments.pdf

Communicable Disease



HAI/AR Unit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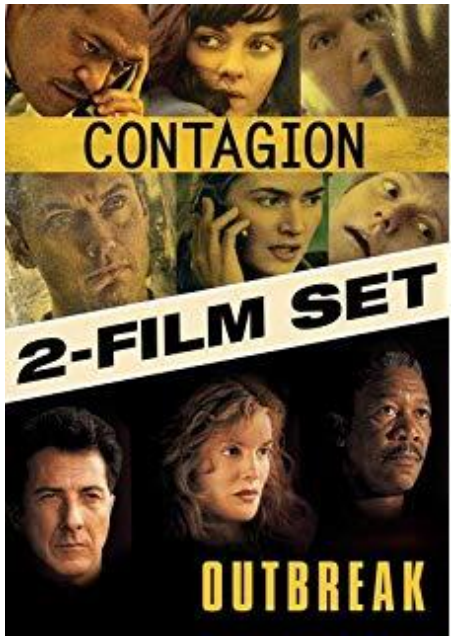
QA Manager- Lab Liaison
Massimo Pacilli
52%- Corp/48%- PHEP
Project Administrator ID
Pharmacist
Amy Hanson
Epidemiologist II
NHSN-Epidemiologist
Kelly Walblay
PHAII-Lab Liaison
Vacant
PHA-II-Temp
Hira Adil
Project Administrator-
HAI Coordinator
Shannon Xydis
Infection Prevention
Specialist
Vacant
Infection Prevention
Specialist
Vacant

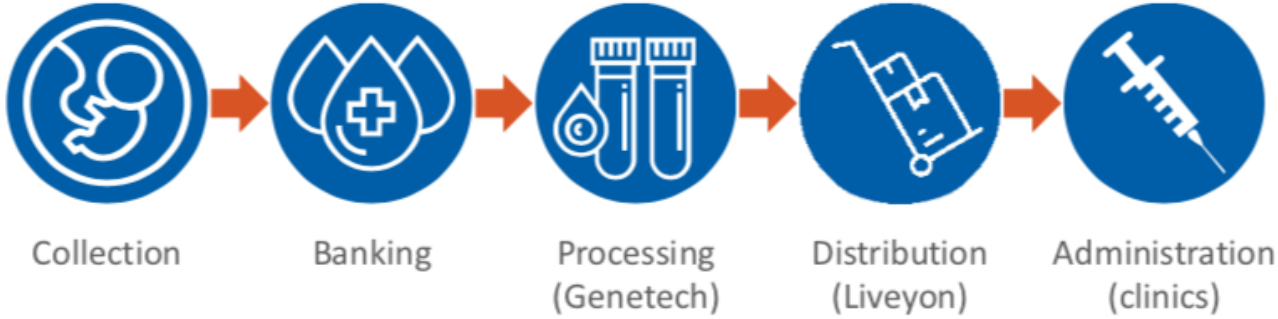
What Do we Do?


CONTAGION
2-FILM SET
OUTBREAK


SUPERBUG OUTBREAK CAUSED
BY DUODENOSCOPE


LEGIONNAIRES'
DISEASE
abc7


NEW ENGLAND
FRAMINGHAM
METHYLPRED.
Lot # 05212012@68
GC


Collection
Banking
Processing
(Genetech)
Distribution
(Liveyon)
Administration
(clinics)

Carbapenemase-Producing Organisms (CPO)

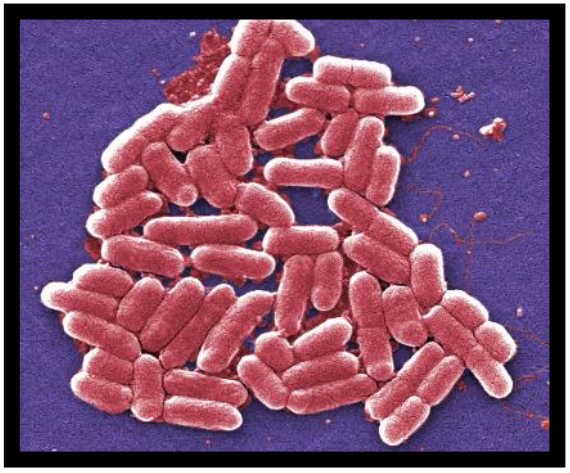
Carbapenemase-

Class of broad-spectrum antibiotics

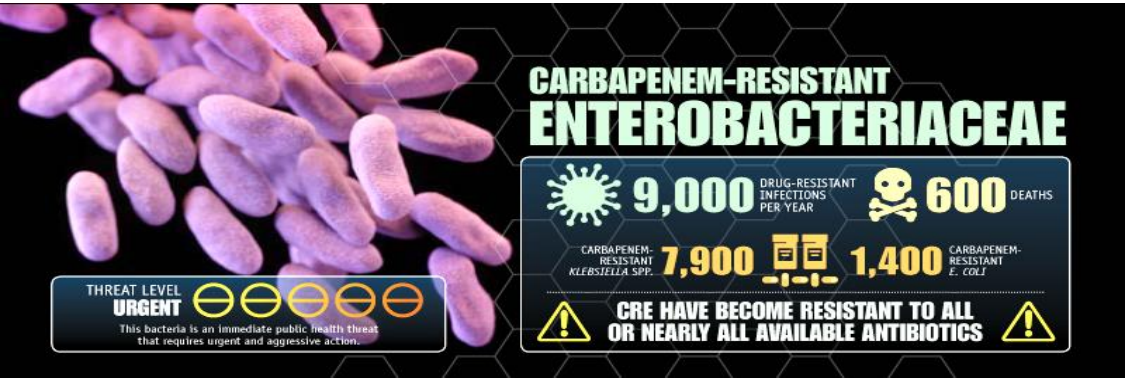
Producing

Bacteria produce enzymes that make antibiotics ineffective

Organisms

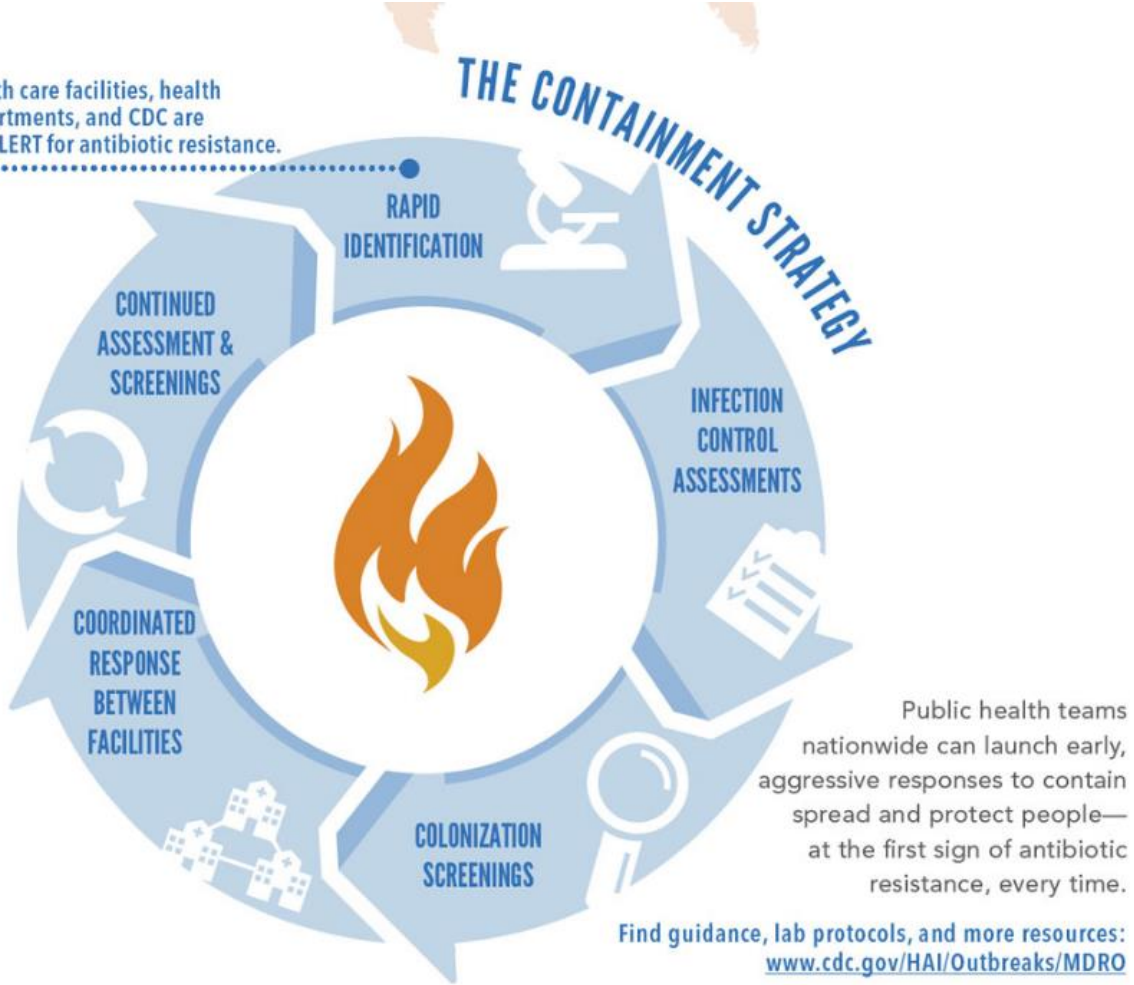


Escherichia coli, *Pseudomonas aeruginosa*, and many more



XDRO registry

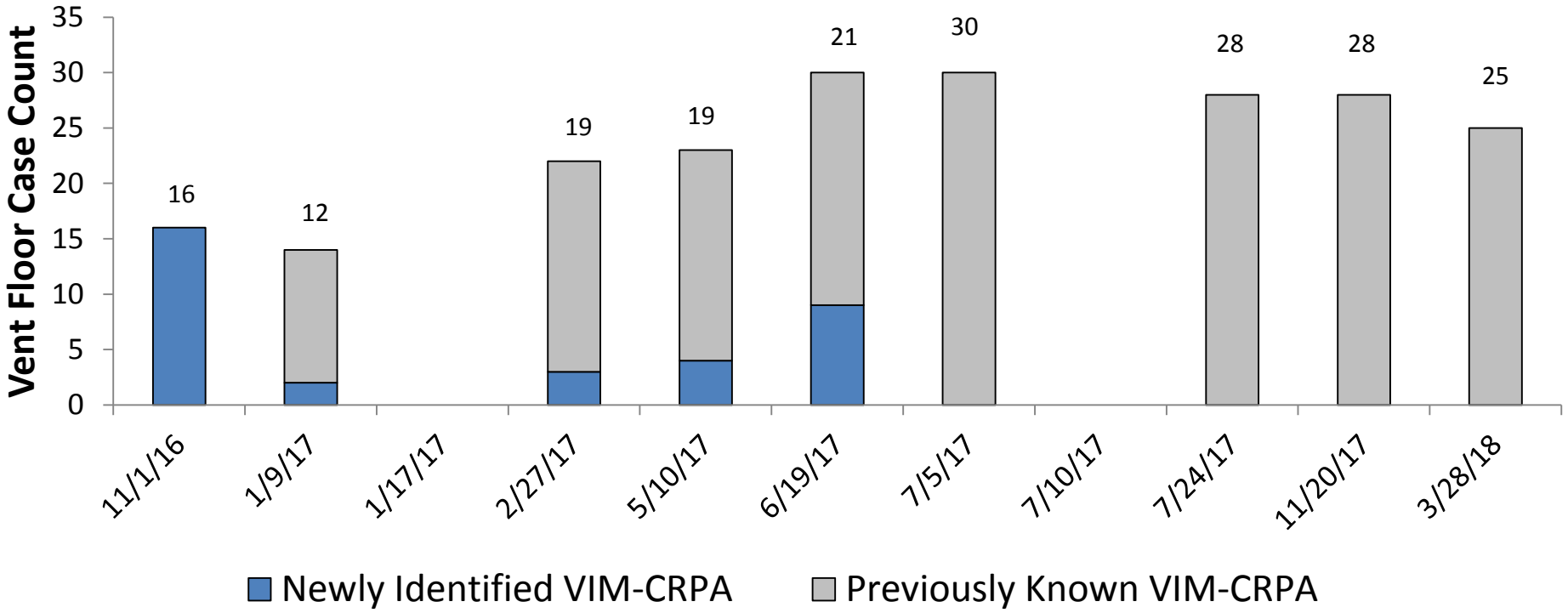
Containment Strategy



Notes from the Field: Large Cluster of Verona Integron-Encoded Metallo-Beta-Lactamase–Producing Carbapenem-Resistant *Pseudomonas aeruginosa* Isolates Colonizing Residents at a Skilled Nursing Facility — Chicago, Illinois, November 2016–March 2018

Weekly / October 12, 2018 / 67(40);1130–1131

Whitney J. Clegg, MD[1]; Massimo Pacilli, MS, MPH[1]; Sarah K. Kemble, MD[1]; Janna L. Kerins, VMD[1,2]; Ahmed Hassaballa, MBBCH[1]; Alexander J. Kallen, MD[3]; Maroya S. Walters, PhD[3]; Alison Laufer Halpin, PhD[3]; Richard A. Stanton, PhD[3]; Sandra Boyd[3]; Paige Gable[3]; Jonathan Daniels, MS[3]; Michael Y. Lin, MD[4]; Mary K. Hayden, MD[4]; Karen Lolans[4]; Deb P. Burdsall, PhD[5]; Mary Alice Lavin, MJ[5]; Stephanie R. Black, MD[1] (View author affiliations)



Candida auris

- Public health threat
  - Healthcare-associated outbreaks
  - Persistent colonization
  - Requires disinfection with sporicidal agent
  - Lab misidentification
  - Antifungal resistance

DEADLY GERMS, LOST CURES

How a Chicago Woman Fell Victim to Candida Auris, a Drug-Resistant Fungus

The mysterious infection has appeared at hospitals around the world, but few institutions or families have discussed their experience.

Deadly Germs, Lost Cures

More in Deadly Germs, Lost Cures »

Culture of Secrecy Shields Hospitals With Outbreaks of Drug-Resistant Infections

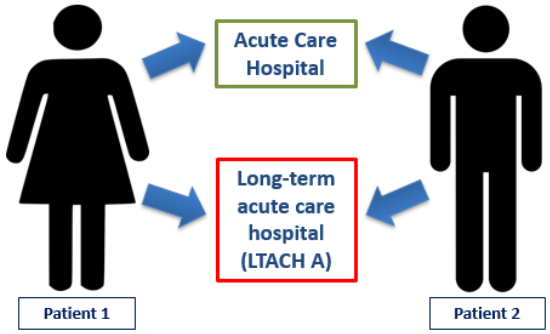
Candida Auris: The Fungus Nobody Wants to Talk About

A Mysterious Infection, Spanning the Globe in a Climate of Secrecy

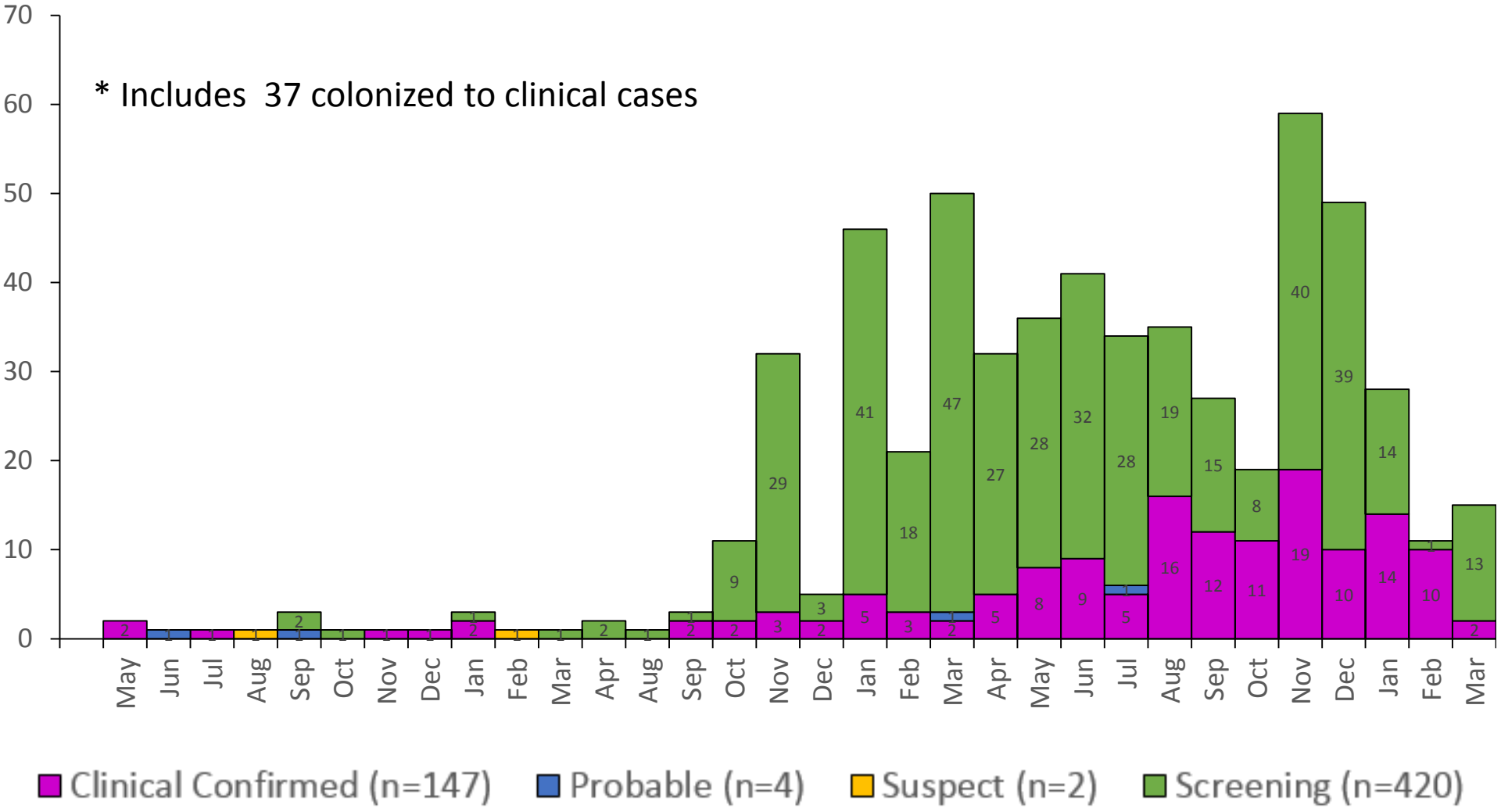
What You Need to Know About Candida Auris

https://www.nytimes.com/2019/04/08/health/candida-auris-hospitals.html

C. auris Emergence in Chicago



Illinois *C. auris* cases (n=573), 03/14/19*

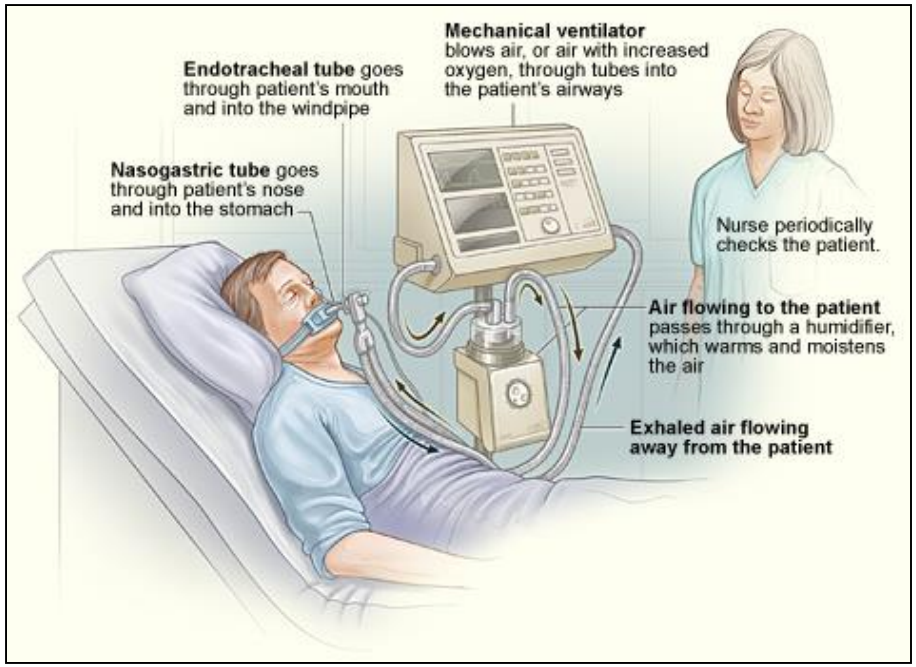


Point Prevalence Surveys, as of March 2019

Chicago Facility type	22 Facilities	53 Surveys	Median Prevalence* (range)
Acute care hospitals	9	9	0% (0 - 14%)
Long-term acute care hospitals	5	18	12 % (0 - 31%)
vSNF (vent floor)	4	21	40% (0 - 71%)
vSNF (non-vent floor)	1	2	0% (0 - 0%)
Skilled nursing facilities	3	3	2% (0 – 2%)

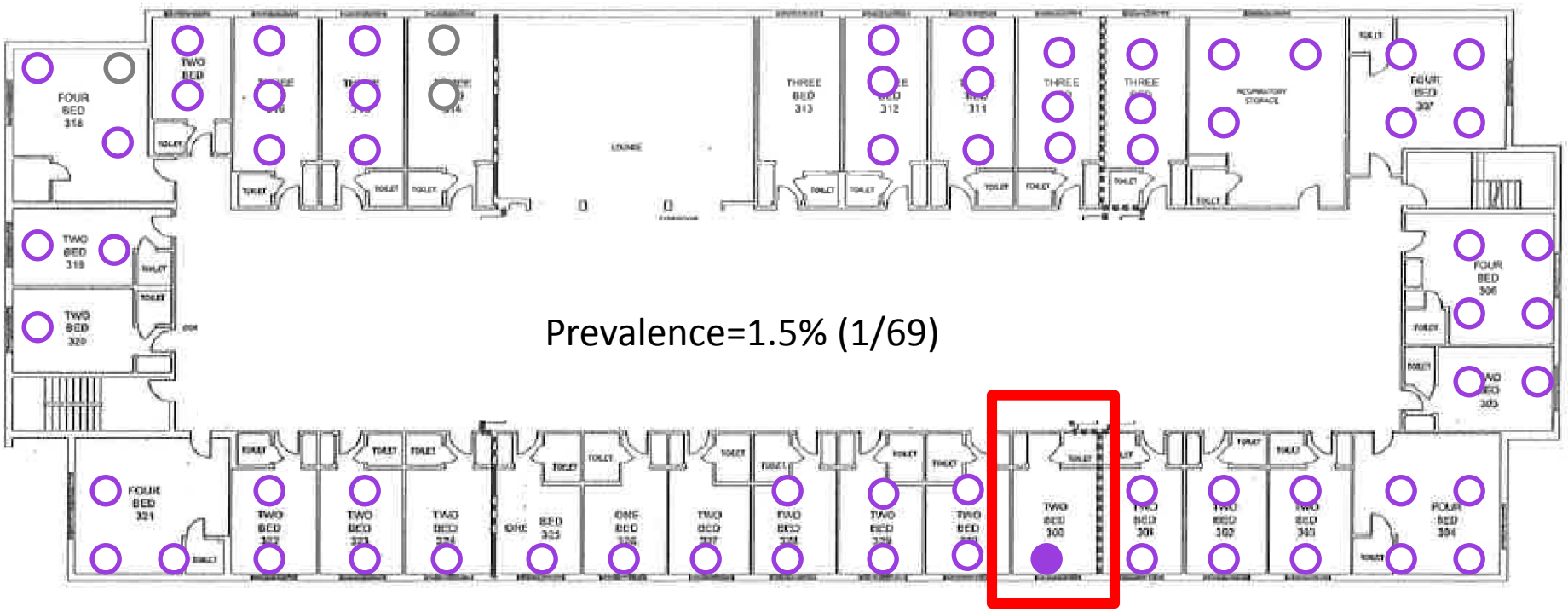
* Number of colonized residents identified during PPS and those previously known infected or colonized residents per the total unit census

What is a vSNF?



- Ventilator capacity
- High acuity patients
- Long lengths of stay
- Limited staffing
- Limited infection control resources

C. auris Prevalence, March 2017



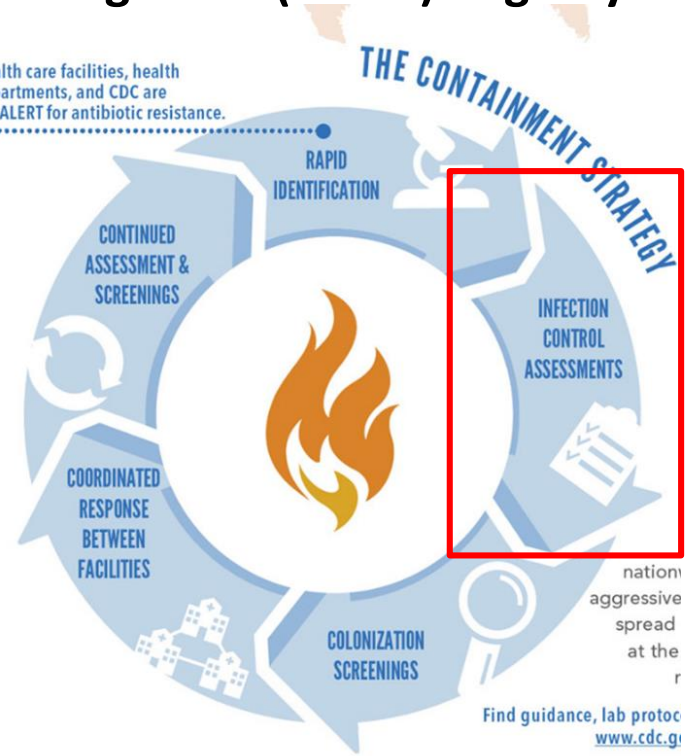
- *C. auris* positive (1)
- Screened negative for *C. auris* (65)
- Not tested for C. auris (refused or not in room) (3)

PPS # 1

Infection Control Assessment

XDRO registry

Extensively Drug Resistant Organism (XDRO) Registry



Environmental cleaning List K*

Contact precautions

Hand hygiene

https://www.cdc.gov/handhygiene/index.html, https://www.cdc.gov/HAI/prevent/ppe.html, https://www.xdro.org

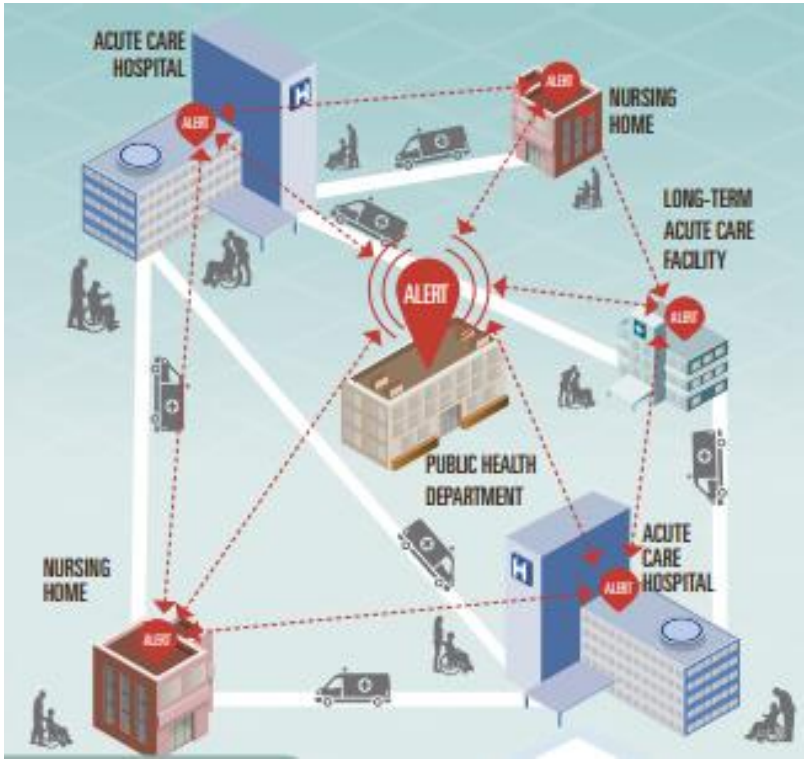
C. auris Prevalence, Oct 2018

● *C. Auris (49)* (* newly identified)

○ No known CRE or *C. auris (20)*

PPS # 8

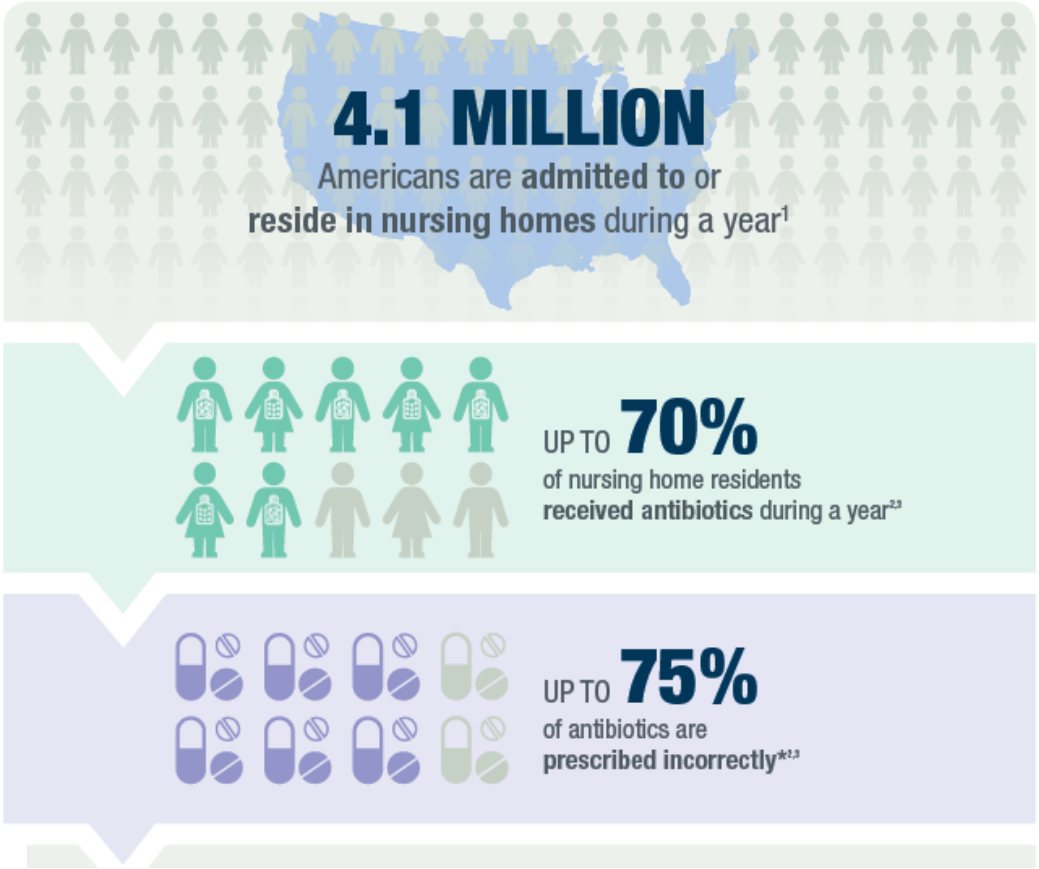
Same Patient, Different Setting



- SAME infection control needs
- DIFFERENT infection control capacity

https://www.cdc.gov/vitalsigns/stop-spread/infographic.html#graphic

Antimicrobial Stewardship Needs in Nursing Homes



Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases

Lim CJ et al. Clin Interven Aging. 2014; 9: 165-177. Nicolle LE et al. ICHE. 2000; 21:537–45.

Join the "GAIN" Collaborative

Our goal is 100% facility participation!

Chicago Department of Public Health's **GAIN** collaborative:

Generating
Antimicrobial Stewardship
Initiatives in Chicago
Skilled **N**ursing Facilities

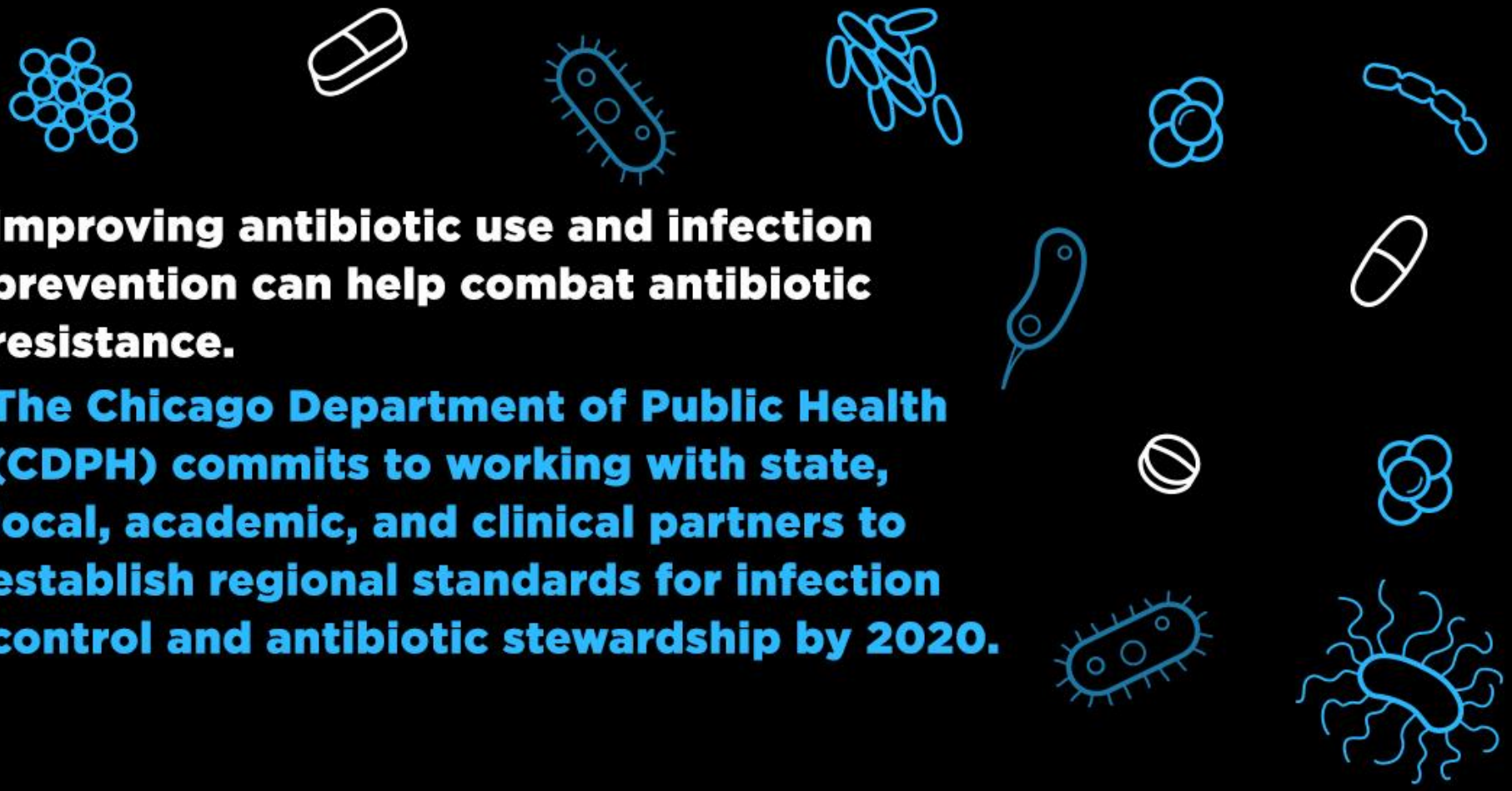
Adapted slide courtesy of Amy Hanson, PharmD, BCPS AQ-IDc

CDPH Response Summary

- Post-acute care facilities likely to amplify the regional burden of MDROs
- Improved understanding of IC challenges and barriers across healthcare networks
- Develop policy initiatives
  - Regulation
  - Reimbursements
  - Credentialing
- Provide training and resources to strengthen IC and stewardship programs

The AMR Challenge

The U.S. government's Antimicrobial Resistance (AMR) Challenge is a yearlong effort to accelerate the fight against antimicrobial resistance across the globe.



https://www.cdc.gov/drugresistance/intl-activities/amr-challenge.html#c

Acknowledgements & Collaborations

CDPH

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IDPH

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Questions

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